

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Applicant: Eric A. Jacobsen

Title: TRANSMIT POWER CONTROL WITHIN A WIRELESS TRANSMITTER

Docket No.: 884.313US1

Filed: August 31, 2000

Examiner: Stephen D'Agosta



Serial No.: 09/652773

Due Date: February 23, 2004

Group Art Unit: 2683

Commissioner for Patents  
P.O. Box 1450  
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APPELLANTS' BRIEF ON APPEAL

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: )

Eric A. Jacobsen )

Examiner: Stephen D'Agosta

Serial No.: 09/652773 )

Group Art Unit: 2683

Filed: August 31, 2000 )

Docket: 884.313US1

For: TRANSMIT POWER )

CONTROL WITHIN A

WIRELESS

TRANSMITTER

Assignee: Intel Corporation

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Technology Center 2000

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**APPELLANTS' BRIEF ON APPEAL**

Mail Stop Appeal Brief  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The Appeal Brief is presented in support of the Notice of Appeal to the Board of Patent Appeals and Interferences, filed on December 23, 2003, from the Rejection of claims 1-33 of the above-identified application, as set forth in the Office Action mailed on August 27, 2003.

This Appeal Brief is filed in triplicate. The Commissioner of Patents and Trademarks is hereby authorized to charge Deposit Account No. 19-0743 in the amount of 330.00 which represents the requisite fee set forth in 37 C.F.R. § 117. The Appellants respectfully request consideration and reversal of the Examiner's rejections of the pending claims 1-33.

## **1. REAL PARTY IN INTEREST**

The real party in interest of the above-captioned patent application is the assignee, INTEL CORPORATION, a Delaware corporation doing business at 2625 Walsh Avenue, Santa Clara, CA 95051, in an assignment recorded on August 31, 2000 (Reel/Frame 011065/0370-0372).

## **2. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to the appellant which will have a bearing on the Board's decision in the present appeal.

## **3. STATUS OF THE CLAIMS**

Claims 1-33 are pending in the application and are rejected.

## **4. STATUS OF AMENDMENTS**

No Amendment has been filed by the appellant subsequent to the Office Action dated August 27, 2003.

## **5. SUMMARY OF THE INVENTION**

A communication system 10 according to an embodiment of the present invention is shown in Figure 1 of the application. The communication system 10 according to an embodiment of the present invention includes an array of antenna elements 12, 24 arranged in a predetermined configuration and an adjustable beamformer 14, 25 coupled to the array of antenna elements to generate a transmit beam in a direction in response to a control signal. The adjustable beamformer 14, 25 is capable of generating a beam in any of a number of different directions. The communication system 10 also includes a power control unit 20 to adjust a power level of a transmit signal to be transmitted by the array of antenna elements 12, 24 based on a parameter associated with the transmit beam.

The communication system 10 according to embodiments of the present invention can be used by subscribers to achieve wireless access to a remote communication system or network. By generating a relatively narrow beam in the direction of a remote transceiver, the available transmit power within the communication system 10 is concentrated in the direction of the remote transceiver. Thus, a higher power level is achievable for penetrating exterior walls of a building than could be attained using an omni-directional transmit beam (or other wide beamwidth beam). In addition, because less power is wasted, a smaller power amplifier can be used in the communication system 10 which reduces equipment cost. The power control unit 20 is operative for adjusting the power level currently being transmitted by the system 10 to insure that transmit power is adequate to penetrate, for example, the exterior walls of the subscriber's building and reach an external base station without exceeding any government mandated power limits.

## **6. ISSUES PRESENTED FOR REVIEW**

- I. Claims 1, 3-5, 7-16, 18-23, 25-29, and 31-33 were improperly rejected under 35 USC § 103(a) as being unpatentable over Daniel et al. (U.S. Patent No. 6,075,484, Daniel) in view of Grubb et al. (U.S. Patent No. 5,768,684, Grubb), Yun (U.S. Patent No. 6,463,295), Owen et al. (U.S. Patent No. 6,421,007, Owen), Kaminski (U.S. Patent No. 6,239,747) and Thibault et al. (U.S. Patent No. 6,240,098, Thibault).
- II. Claim 6 was improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Daniel et al. (U.S. Patent No. 6,075,484, Daniel) in view of Grubb et al. (U.S. Patent No. 5,768,684, Grubb), Yun (U.S. Patent No. 6,463,295), and Bolgiano et al. (U.S. Patent No. 5,663,990, Bolgiano).
- III. Claims 2, 17, 24, and 30 were improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Daniel et al. (U.S. Patent No. 6,075,484, Daniel), in view of Grubb et al. (U.S. Patent No. 5,768,684, Grubb), Yun (U.S. Patent No. 6,463,295), Roddy et

al. (U.S. Patent No. 6,127,740, Roddy), and Rodal (U.S. Patent No. 5,650,785).

## **7. GROUPING OF CLAIMS**

Claims 1, 3-5, 7-16, 18-23, 25-29, and 31-33 stand together for purposes of this appeal.

Claim 6 stands alone for purposes of this appeal.

Claims 2, 17, 24, and 30 stand together for purposes of this appeal.

Appellant does not make any admission that any claim may not be argued in another forum as independently patentable from any other claim. Additionally, Appellant's grouping of claims above is provided for the purposes of this Appeal Brief only.

## **8. ARGUMENT**

### *The Applicable Law*

All of the pending claims were rejected under 35 U.S.C. §103:

"A patent may not be obtained...if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103(a).

The MPEP states the following with regard to rejections under 35 USC § 103:

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP 2143.

The appellant respectfully submits that the rejections of claims 1-33 under §103 are improperly based on hindsight as the Office Action has not provided objective evidence of a suggestion or motivation to form the proposed systems from the applied references. References

have been “interpreted” in the Office Action as containing claimed subject matter without supporting evidence. The Office Action is also missing evidence of a reasonable expectation of success for each combination of references.

A Federal Circuit opinion states that the suggestion or motivation to combine references and the reasonable expectation of success must both be found in the prior art. MPEP 2143 citing *In re Vaeck*, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

Multiple Federal Circuit decisions emphasize the need for the PTO to furnish evidence in support of claim rejections. For example, the Federal Circuit addressed citation of “basic knowledge and common sense” in rejections in *In re Zurko*, 59 USPQ2d 1693 (Fed. Cir. 2001):

“With respect to core factual findings in a determination of patentability, however, the Board [Board of Patent Appeals and Interferences] cannot simply reach conclusions based on its own understanding or experience – or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings.” *In re Zurko*, 59 USPQ2d at 1697.

The Federal Circuit has particularly emphasized the need for the PTO to furnish evidence in support of claim rejections under 35 USC § 103 in *In re Lee*:

“When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness....The factual inquiry whether to combine references must be thorough and searching....It must be based on objective evidence of record.” *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

The Federal Circuit stated that the “need for specificity pervades this authority” requiring a teaching, motivation, or suggestion to select and combine references. *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002). The Federal Circuit has expressed this need for specificity in several cases:

“[T]he best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references....the showing must be clear and particular.” *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

"[E]ven when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination." *In re Rouffet*, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

"[P]articular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed." *In re Kotzab*, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

That an invention is within the ordinary skill of the art alone does not make it obvious:

"A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made"" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." MPEP 2143.01 citing *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

The Board in *Ex parte Levengood* stated:

"an examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done." *Ex parte Levengood*, 28 USPQ2d at 1302.

### Rejections

I. The Rejection of Claims 1, 3-5, 7-16, 18-23, 25-29, and 31-33 under 35 U.S.C. §103.

Claims 1, 3-5, 7-16, 18-23, 25-29, and 31-33 were rejected under 35 USC §103(a) as being unpatentable over Daniel in view of Grubb, Yun, Owen, Kaminski and Thibault. The appellant respectfully traverses.

Claims 1, 3-5, 7-16, 18-23, 25-29, and 31-33 stand together for purposes of this appeal.

Daniel relates to a direction of arrival aided beamforming system shown in Figure 3. The system of Daniel is used to position beams and nulls in an antenna beam pattern. Daniel, Abstract. The Office Action states that Daniel is "silent on a power control unit" to "adjust transmit power." Office Action, page 3.



Grubb relates to a method for adjusting transmission power between communication stations based on returned signal quality. Grubb, Abstract. The Office Action has not identified any mention in Grubb of determining a direction of a location and generating a transmit beam in that direction.

The Office Action did not identify any evidence in the remaining references Yun, Owen, Kaminski, or Thibault, of a suggestion for modifying Daniel, or for combining Daniel and Grubb with those references. Yun relates to a “method for ongoing power control for a communication station with a multiple antenna array” without determining the direction of a transmit beam. Owen relates to “determining the direction of a signal” and “controlling the beam form of a downlink signal in response to the direction estimate” without adjusting power. Kaminski relates to an “array antenna for direction finding” and does not show adjusting power. Thibault relates to “spatial multiplexing and demultiplexing of radio signals” without adjusting power.

The Office Action addressed the claims in the following groups:

**Claims 1, 16, 22, 28, and 31**

The Office Action first addressed claims 1, 16, 22, 28, and 31. Claim 22 recites “a communication system for use in communicating with a remote communication entity, comprising an array of antenna elements arranged in a predetermined configuration, an adjustable beamformer coupled to said array of antenna elements to generate a transmit beam in a predetermined direction in response to a control signal, said adjustable beamformer being capable of generating a beam in any of a plurality of different directions, and a power control unit to adjust a power level of a transmit signal to be transmitted by said array of antenna elements based on at least one parameter associated with said transmit beam generated by said adjustable beamformer.” Claims 1, 16, and 28 recite similar features, and claim 31 is dependent on claim 28.

The Office Action states that Daniel is “silent on a power control unit” to “adjust transmit

power” and that “Grubb teaches bi-directional power control ... The examiner interprets the stations as having power control units that perform this operation.” Elements not found in Grubb are not in Grubb, absent further evidence in the prior art itself, under *In re Zurko*. Office Action states that “[i]t would have been obvious .... to modify Daniel, such that the system has a power control unit, so that the optimally steered/beamformed antenna array also uses power control for best possible transmitted/received signal quality.” Office Action, page 3. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

The Office Action did not identify any evidence in Yun, Owen, Kaminski, or Thibault of a suggestion for modifying Daniel, or for combining Daniel and Grubb with those references.

### Claims 3, 18, and 33

Addressing claims 3, 18, and 33, the Office Action states that “Daniel teaches claim 1/28.” This is not correct in that claims 1 and 28 are rejected in view of the combination of Daniel, Grubb, Yun, Owen, Kaminski, and Thibault under §103. Claim 3 recites that “said power control unit adjusts said transmit power level of said system to comply with mandated transmit power limits.” Claims 18 and 33 recite similar features. The Office Action states that “Grubb teaches power control for maintaining a minimum transmission power level which is interpreted as keeping the power levels within allowable/mandated power levels.” Elements not found in Grubb are not in Grubb, absent further evidence in the prior art itself, under *In re Zurko*.

The Office Action also states that “[i]t would have been obvious .... to modify Daniel, such that transmit power complies with mandated transmit power levels, to ensure the system stays within regulated/licensed operating limits.” Office Action, page 4. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*. In fact, government mandated power limits are discussed in the appellant’s specification, page 2, lines 15-25. The Office Action is improperly using hindsight in combining

Daniel, Grubb, Yun, Owen, Kaminski, and Thibault contrary to *In re Dembiczak*.

### Claims 7 and 29

Addressing claims 7 and 29, the Office Action states that "Daniel teaches claim 6/28." This is not correct as discussed above with regard to claim 28. Claim 6 was separately rejected on different grounds. Claim 7 recites that "said power control unit includes a controller to calculate said antenna gain related parameter based upon delay settings of said transmit beamformer." Claim 29 recites a similar feature. The Office Action states that "Grubb teaches bi-directional power control....the examiner interprets the stations as having power control units that perform the operation of calculating gain/BER/RSSI/SNR." Elements not found in Grubb are not in Grubb, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action also states that "[i]t would have been obvious .... to modify Daniel, such that the PCU calculates an antenna gain parameter based upon the delay setting, to provide optimal RF transmission to a transceiver based upon its location/direction in view of the antenna beamformer." Office Action, page 4. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

### Claim 8

Addressing claim 8, the Office Action states that "Daniel teaches claim 1." This is not correct as stated above. Claim 8 recites "the system claimed in claim 1 wherein said transmit beam generated by said transmit beamformer is approximately centered in the direction of the remote transceiver determined by said direction determination unit." The Office action cited C2, L28-35 and C6, L41-46 of Daniel with respect to claim 8, but the feature recited in claim 8 is not found in these sections of Daniel. The appellant respectfully submits that the Office Action has not identified text in Daniel that shows the subject matter recited in claim 8. Elements not found in Daniel are not in Daniel, absent further evidence in the prior art itself, under *In re Zurko*.

**Claim 9**

Addressing claim 9, the Office Action states that "Daniel teaches claim 1." This is not correct as stated above. Claim 9 recites "the system claimed in claim 1, further comprising an input/output interface to couple said system to a data processing device." The Office action cited C7, L8-16, L25-32, and L33-42 of Daniel with respect to claim 9, but the feature recited in claim 9 is not found in these sections of Daniel. The Office Action states that "the examiner interprets any processor as having a data port which an engineer can connect in order to gather/view data. One skilled in the art would also couple it to a data processing device." Elements not found in Daniel are not in Daniel, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action states that "[i]t would have been obvious .... to modify Daniel, such that the system can interface to a data processing device, to provide data to a technician (or user)." Office Action, page 5. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

**Claims 10, 11, and 12**

Addressing claims 10, 11, and 12 the Office Action states that "Daniel teaches claim 1." This is not correct as stated above. Claims 10, 11, and 12 are dependent on claim 9 and recite individually "a serial data port," "a universal serial bus (USB) port," and "plug-and-play capability." The Office action cited C7, L33-42 of Daniel, and states that "the examiner interprets any processor as having a data port (i.e. serial, parallel, USB, LAN, wireless, etc.) which an engineer can connect in order to gather/view data. One skilled in the art would also expect that said port would have plug-and-play capability." Elements not found in Daniel are not in Daniel, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action states that "[i]t would have been obvious .... to modify Daniel, such that the system comprises a serial port, USB port or plug-n-play capability, to ensure that it utilizes industry-standard hardware and

software which allows it to interoperate with a plethora of other commercially available devices.” Office Action, page 5. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

### Claim 13

Addressing claim 13 the Office Action states that “Daniel teaches claim 1.” This is not correct as stated above. Claim 13 is dependent on claim 1, and recites that “said array of transmit antenna elements, said direction determination unit, said transmit beamformer, and said power control unit are each mounted on a common support structure.” The Office Action states that Daniel shows an “antenna array, DDU and beamformer are each mounted on a common support structure” referring to Figure 1 of Daniel. Office Action, page 6. The appellant respectfully traverses, as Daniel shows devices 120, 130, 140, but the Office Action has not identified text in Daniel indicating that all of the elements of claim 13 are in each device. The Office Action states that “the examiner interprets the layout of the physical system as a design choice in which all parts mentioned above are mounted on a common structure.” Elements not found in Daniel or Grubb are not in those documents, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action states that “[i]t would have been obvious .... to modify Daniel, such that it contains a PCU, to provide means for the system to control it’s transmit power for optimal RF transmission.” Office Action, page 6. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

**Claim 14**

Addressing claim 14 the Office Action states that “Daniel teaches claim 14.” This is not correct in that claims 1, 13, and 14 dependent thereon, are rejected in view of the combination of Daniel, Grubb, Yun, Owen, Kaminski, and Thibault under §103. Claim 14 recites that “said common support structure is adapted for desktop placement.” The Office Action states that “one skilled in the art would be able to build the system such that it can be placed anywhere (eg. wherein said common structure is adapted for desktop placement).” Office Action, page 6. Elements not found in Daniel are not in Daniel, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

**Claim 15**

Addressing claim 15 the Office Action states that “Daniel teaches claim 1.” This is not correct as stated above. Claim 15 is dependent on claim 1 and recites “at least one variable gain amplifier to amplify a transmit signal before it is delivered to said array of transmit antenna elements during a transmit operation, wherein said power control unit controls the gain of said at least one variable gain amplifier to adjust the transmit power level of said system.” Grubb shows a variable gain amplifier 118 in Figure 7. The Office Action states that “[i]t would have been obvious . . . to modify Daniel, such that the system uses a variable gain amplifier, to ensure the RF signal can be variably controlled.” Office Action, page 6. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

**Claim 19**

Addressing claim 19 the Office Action states that “Daniel teaches claim 18.” This is not correct in that claims 16, 18, and 19 dependent thereon, are rejected in view of the combination

of Daniel, Grubb, Yun, Owen, Kaminski, and Thibault under §103. Claim 19 recites “using said antenna gain related parameter includes adjusting the power level of said transmit signal to maximize said power level while not exceeding said mandated transmit power limits.” The Office Action states that “Grubb teaches power control for maintaining a minimum transmission power level which is interpreted as keeping the power levels within allowable/mandated power levels.” Elements not found in Grubb are not in Grubb, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action also states that “[i]t would have been obvious .... to modify Daniel, such the antenna gain maximizes power but does not exceed mandated transmit power levels, to ensure the invention stays within regulated/licensed operating transmit power limits.” Office Action, page 7. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*. In fact, government mandated power limits are discussed in the appellant’s specification, page 2, lines 15-25. The Office Action is improperly using hindsight in combining Daniel, Grubb, Yun, Owen, Kaminski, and Thibault contrary to *In re Dembiczak*.

### Claim 21

Addressing claim 21 the Office Action states that “Daniel teaches claim 16.” This is not correct as discussed above. Claim 21 is dependent on claim 16 and recites “determining a direction, generating a transmit antenna beam, determining a parameter related to an antenna gain, and using said antenna gain related parameter are performed from a single indoor location.” The Office Action identifies Figure 1 of Daniel showing terrestrial-based communication devices 120, 130, 140, but the Office Action has not identified text in Daniel indicating that all of the elements of claim 21 are in each device. Elements not found in Daniel are not in Daniel, absent further evidence in the prior art itself, under *In re Zurko*.

**Claim 23**

Addressing claim 23 the Office Action states that “Daniel teaches claim 22.” This is not correct as discussed above. Claim 22 recites “a communication system comprising, among other elements, a power control unit to adjust a power level of a transmit signal to be transmitted by said array of antenna elements based on at least one parameter associated with said transmit beam generated by said adjustable beamformer.” Claim 23 is dependent on claim 22 and recites that “said at least one parameter associated with said transmit beam includes an antenna gain related parameter.” The Office Action states that “Grubb teaches bi-directional power control ... The examiner interprets the stations as having power control units that calculates signal quality/antenna gain parameters.” Elements not found in Grubb are not in Grubb, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action states that “[i]t would have been obvious .... to modify Daniel, such that an antenna gain related parameter is associated with the transmit beam, to ensure that antenna gain can be a parameter that is modified as needed for optimal RF transmission.” Office Action, page 7. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

**Claims 26 and 32**

Addressing claims 26 and 32 the Office Action states that “Daniel teaches claim 22/28.” This is not correct as discussed above. Claims 26 and 32 recite that “said adjustable beamformer is part of an adaptive antenna arrangement.” The Office Action identified Figure 3, #310 and #330 of Daniel, but did present evidence that the feature recited in claims 26 and 32 are shown in Daniel. Elements not found in Daniel are not in Daniel, absent further evidence in the prior art itself, under *In re Zurko*.



## Claim 27

Addressing claim 27 the Office Action states that “Daniel teaches claim 22.” This is not correct as discussed above. Claim 27 recites that “said power control unit adjusts the power level of the transmit signal so that a maximum allowed power level is not exceeded.” The Office Action states that “Grubb teaches power control ...which is interpreted as keeping the power levels within maximum allowed power levels.” Elements not found in Grubb are not in Grubb, absent further evidence in the prior art itself, under *In re Zurko*. The Office Action states that “[i]t would have been obvious .... to modify Daniel, such that the PCU controls power level not to exceed maximum allowed, to ensure the system stays within regulated/licensed operating limits.” Office Action, page 4. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*. In fact, government mandated power limits are discussed in the appellant’s specification, page 2, lines 15-25. The Office Action is improperly using hindsight in combining Daniel, Grubb, Yun, Owen, Kaminski, and Thibault contrary to *In re Dembiczak*.

## Conclusion

The appellant respectfully submits that the rejection of claims 1, 3-5, 7-16, 18-23 and 25-27 under §103 is improperly based on hindsight contrary to *In re Dembiczak* as the Office Action has not provided objective evidence of a suggestion or motivation to form a system by combining elements from Daniel, Grubb, Yun, Owen, Kaminski, and Thibault as is required by *In re Lee*. The Office Action cannot establish obviousness without “evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.” *Ex parte Levengood*. References have been “interpreted” in the Office Action as containing claimed subject matter without supporting evidence as required by *In re Zurko*. This occurs with respect to claims 1, 3, 7-14, 16, 18, 19, 21-23, 26-28, 29, and 31-33. The Office Action is also missing evidence of a reasonable expectation of success of this combination of Daniel, Grubb, Yun,

Owen, Kaminski, and Thibault as required by *In re Vaeck* and *In re Lee*. The Office Action has not established a *prima facie* case of obviousness without showing a reasonable expectation of success.

The appellant respectfully submits that a *prima facie* case of obviousness of claims 1, 3-5, 7-16, 18-23 and 25-27 has not been established in the Office Action. Reversal of the rejection of claims 1, 3-5, 7-16, 18-23 and 25-27 under 35 U.S.C. §103 is respectfully requested.

II. The Rejection of claim 6 under 35 U.S.C. §103.

Claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Daniel in view of Grubb, Yun, and Bolgiano. The appellant respectfully traverses.

Claim 6 stands alone for purposes of this appeal.

The Office Action states that "Daniel teaches claim 1." This is not correct in that claim 1 was rejected in view of the combination of Daniel, Grubb, Yun, Owen, Kaminski, and Thibault under §103 addressed above. Claim 6 is dependent on claim 1 that recites "a system for use in wirelessly transmitting a communication signal to a remote transceiver comprising, among other elements, a transmit beamformer to generate a transmit beam in the direction of a remote transceiver, and a power control unit to adjust a transmit power level of said system." Claim 6 further recites that "said transmit beamformer includes a variable delay unit for each of said antenna elements within said array of transmit antenna elements and a controller to determine a delay setting for each variable delay unit based upon the direction of the remote transceiver determined by said direction determination unit."

Bolgiano relates to a "wireless telephone distribution system with time and space diversity transmission." Bogliano does not show determining the direction of a transmit beam or adjusting the power of a beam.

The Office Action states that "A RAKE receiver takes into account variable delay signals being received based upon location/direction of a subscriber and multipath fading of the RF

signals.” Office Action, page 8. The Office Action did not identify any prior art evidence supporting this statement as required by *In re Zurko*.

The Office Action quotes Bolgiano C25, L1-21, and then states that “[i]t would have been obvious .... to modify Daniel, such that the beamformer has a variable delay unit which determines a delay based upon direction of the remote transceiver, to ensure that RF signals transmitted in a certain direction (eg. to the transceiver) are adjusted with variable delay(s) for optimal transmission.” Office Action, page 9. The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

## Conclusion

The appellant respectfully submits that the rejection of claim 6 under §103 is improperly based on hindsight contrary to *In re Dembiczak* as the Office Action has not provided objective evidence of a suggestion or motivation to form a system by combining elements from Daniel, Grubb, Yun, and Bolgiano as is required by *In re Lee*. The Office Action cannot establish obviousness without “evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.” *Ex parte Levengood*. The Office Action is also missing evidence of a reasonable expectation of success of this combination of Daniel, Grubb, Yun, and Bolgiano as required by *In re Vaeck* and *In re Lee*. In particular, the Office Action has not provided evidence as to how the file manipulation referred to in Bolgiano would be implemented in a system combining Daniel, Grubb, and Yun. The Office Action has not established a *prima facie* case of obviousness without showing a reasonable expectation of success.

The appellant respectfully submits that a *prima facie* case of obviousness of claim 6 has not been established in the Office Action. Reversal of the rejection of claim 6 under 35 U.S.C. §103 is respectfully requested.

III. The Rejection of claims 2, 17, 24, and 30 under 35 U.S.C. §103.

Claims 2, 17, 24, and 30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Daniel in view of Grubb, Yun, Roddy, and Rodal. The appellant respectfully traverses.

Claims 2, 17, 24, and 30 stand together for purposes of this appeal.

Claim 24 is dependent on claim 22 (recited above) and further recites “a duty cycle determination unit to determine an average transmit duty cycle of said system over a predetermined time period, wherein said power control unit adjusts the power level of the transmit signal to be transmitted by said array of antenna elements based on said average transmit duty cycle.” Claims 2, 17, and 30 recite similar features.

Roddy relates to a “system for controlling power in a remote signalling device” but does not show determining the direction of a transmit beam. The power control signal of Roddy can be pulse width modulated. Roddy, column 4, lines 24-26. Rodal relates to a GPS receiver with modulation of operating power to provide a minimum signal strength for a valid location fix, but also does not show determining the direction of a transmit beam.

The Office Action states that “Daniel teaches claim 1.” This is not correct in that claim 1 was rejected in view of the combination of Daniel, Grubb, Yun, Owen, Kaminski, and Thibault under §103 addressed above. The Office Action quotes Roddy C4, L44-62, and states that “[i]t would have been obvious .... to modify Daniel, such that a duty cycle unit is used to determine average transmit duty cycle, to provide means for the PCU to adjust transmit power level as needed for optimal wireless transmission/reception.” The Office Action did not identify any prior art evidence as the source of this suggestion for modifying Daniel, as is required by *In re Lee*.

The Office Action did not identify in Rodal or Rodal any evidence of a suggestion for modifying Daniel, or for combining Daniel, Grubb, Yun, Roddy, and Rodal.

## Conclusion

The appellant respectfully submits that the rejection of claims 2, 17, 24, and 30 under

§103 is improperly based on hindsight contrary to *In re Dembiczak* as the Office Action has not provided objective evidence of a suggestion or motivation to form a system by combining elements from Daniel, Grubb, Yun, Roddy, and Rodal as is required by *In re Lee*. The Office Action cannot establish obviousness without “evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.” *Ex parte Levengood*. The Office Action is also missing evidence of a reasonable expectation of success of this combination of Daniel, Grubb, Yun, Roddy, and Rodal as required by *In re Vaeck* and *In re Lee*. In particular, the Office Action has not provided evidence as to how the controller referred to in Roddy would be used to implement the method of Roddy in a system combining Daniel, Grubb, and Yun. The Office Action has not established a *prima facie* case of obviousness without showing a reasonable expectation of success.

The appellant respectfully submits that a *prima facie* case of obviousness of claims 2, 17, 24, and 30 has not been established in the Office Action. Reversal of the rejection of claims 2, 17, 24, and 30 under 35 U.S.C. §103 is respectfully requested.

APPELLANTS' BRIEF ON APPEAL

Serial Number: 09/652773

Filing Date: August 31, 2000

Title: TRANSMIT POWER CONTROL WITHIN A WIRELESS TRANSMITTER

Assignee: Intel Corporation

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Dkt: 884.313US1 (INTEL)

**9. REQUEST FOR REVERSAL**

For the foregoing reasons, the appellant respectfully submits that the rejections of claims 1-33 under 35 U.S.C. §103 were erroneous. Reversal of those rejections is respectfully requested, as well as the allowance of all the rejected claims.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Appeal Brief, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 23 day of February 2004.

Name

KACIA LEE

Signature

Kacia Lee

## APPENDIX I

### The Claims on Appeal

1. (Original) A system for use in wirelessly transmitting a communication signal to a remote transceiver, said system comprising:
  - an array of transmit antenna elements arranged in a predetermined pattern;
  - a direction determination unit to determine a direction of the remote transceiver;
  - a transmit beamformer coupled to said array of antenna elements to generate a transmit beam in the direction of the remote transceiver; and
  - a power control unit to determine an antenna gain related parameter associated with said transmit beam generated by said transmit beamformer and to adjust a transmit power level of said system based on said antenna gain related parameter.
2. (Original) The system claimed in claim 1, further comprising:
  - a duty cycle unit, coupled to said power control unit, to determine an average transmit duty cycle of said system over a predetermined time period and to deliver said average transmit duty cycle information to said power control unit, wherein said power control unit uses said average transmit duty cycle information to adjust the transmit power level of said system.
3. (Original) The system claimed in claim 1, wherein:
  - said power control unit adjusts said transmit power level of said system to comply with mandated transmit power limits.
4. (Original) The system claimed in claim 1, wherein:
  - said array of transmit antenna elements, said direction determination unit, and said transmit beamformer are each part of an adaptive antenna arrangement.

5. (Original) The system claimed in claim 1, further comprising:  
an array of receive antenna elements that are arranged in a predetermined pattern for use in receiving a communication signal from the remote transceiver, wherein said direction determination unit includes means for analyzing signal portions received by individual antenna elements within said array of receive elements to determine the direction of the remote transceiver.
6. (Original) The system claimed in claim 1, wherein:  
said transmit beamformer includes a variable delay unit for each of said antenna elements within said array of transmit antenna elements and a controller to determine a delay setting for each variable delay unit based upon the direction of the remote transceiver determined by said direction determination unit.
7. (Original) The system claimed in claim 6, wherein:  
said power control unit includes a controller to calculate said antenna gain related parameter based upon delay settings of said transmit beamformer.
8. (Original) The system claimed in claim 1, wherein:  
said transmit beam generated by said transmit beamformer is approximately centered in the direction of the remote transceiver determined by said direction determination unit.
9. (Original) The system claimed in claim 1, further comprising:  
an input/output interface to couple said system to a data processing device.
10. (Original) The system claimed in claim 9, wherein:  
said input/output interface includes a serial data port.



11. (Original) The system claimed in claim 9, wherein:  
said input/output interface includes a universal serial bus (USB) port.
12. (Original) The system claimed in claim 9, wherein:  
said input/output interface includes plug-and-play capability.
13. (Original) The system claimed in claim 1, wherein:  
said array of transmit antenna elements, said direction determination unit, said transmit beamformer, and said power control unit are each mounted on a common support structure.
14. (Original) The system claimed in claim 13, wherein:  
said common support structure is adapted for desktop placement.
15. (Original) The system claimed in claim 1, comprising:  
at least one variable gain amplifier to amplify a transmit signal before it is delivered to said array of transmit antenna elements during a transmit operation, wherein said power control unit controls the gain of said at least one variable gain amplifier to adjust the transmit power level of said system.
16. (Original) A method for use in wirelessly transmitting a communication signal to a remote location, said method comprising:  
determining a direction of said remote location;  
generating a transmit antenna beam in the direction of said remote location using phased array principles;  
determining a parameter related to an antenna gain associated with said transmit antenna beam; and  
using said antenna gain related parameter to adjust a power level of a transmit signal to be transmitted to said remote location via said transmit antenna beam.

17. (Original) The method claimed in claim 16, further comprising:  
determining an average transmit duty cycle associated with transmissions to said remote location; and  
using said average transmit duty cycle to adjust the power level of said transmit signal.
18. (Original) The method claimed in claim 16, wherein:  
using said antenna gain related parameter includes adjusting the power level of said transmit signal in a manner that complies with mandated transmit power limits.
19. (Original) The method claimed in claim 18, wherein:  
using said antenna gain related parameter includes adjusting the power level of said transmit signal to maximize said power level while not exceeding said mandated transmit power limits.
20. (Original) The method claimed in claim 16, wherein:  
determining a direction of said remote location includes receiving an RF signal from said remote location and analyzing said RF signal to determine the direction of said remote location.
21. (Original) The method claimed in claim 16, wherein:  
determining a direction, generating a transmit antenna beam, determining a parameter related to an antenna gain, and using said antenna gain related parameter are performed from a single indoor location.
22. (Original) A communication system for use in communicating with a remote communication entity, comprising:  
an array of antenna elements arranged in a predetermined configuration;  
an adjustable beamformer coupled to said array of antenna elements to generate a

transmit beam in a predetermined direction in response to a control signal, said adjustable beamformer being capable of generating a beam in any of a plurality of different directions; and  
a power control unit to adjust a power level of a transmit signal to be transmitted by said array of antenna elements based on at least one parameter associated with said transmit beam generated by said adjustable beamformer.

23. (Original) The communication system claimed in claim 22, wherein:

said at least one parameter associated with said transmit beam includes an antenna gain related parameter.

24. (Original) The communication system claimed in claim 22, further comprising:

a duty cycle determination unit to determine an average transmit duty cycle of said system over a predetermined time period, wherein said power control unit adjusts the power level of the transmit signal to be transmitted by said array of antenna elements based on said average transmit duty cycle.

25. (Original) The communication system claimed in claim 22, wherein:

said adjustable beamformer generates the transmit beam in the predetermined direction using conventional phased array techniques.

26. (Original) The communication system claimed in claim 22, wherein:

said adjustable beamformer is part of an adaptive antenna arrangement.

27. (Original) The communication system claimed in claim 22, wherein:

said power control unit adjusts the power level of the transmit signal so that a maximum allowed power level is not exceeded.

28. (Previously Presented) A communication system for use in communicating with a remote communication entity, comprising:

- an array of dipole antenna elements arranged in a predetermined configuration;
- an adjustable beamformer coupled to said array of dipole antenna elements to generate a transmit beam in a predetermined direction in response to a control signal, said adjustable beamformer being capable of generating a beam in any of a plurality of different directions; and
- a power control unit to adjust a power level of a transmit signal to be transmitted by said array of dipole antenna elements based on at least one parameter associated with said transmit beam generated by said adjustable beamformer.

29. (Previously Presented) The communication system claimed in claim 28, wherein:

- said at least one parameter associated with said transmit beam includes an antenna gain related parameter.

30. (Previously Presented) The communication system claimed in claim 28, further comprising:

- a duty cycle determination unit to determine an average transmit duty cycle of said system over a predetermined time period, wherein said power control unit adjusts the power level of the transmit signal to be transmitted by said array of dipole antenna elements based on said average transmit duty cycle.

31. (Previously Presented) The communication system claimed in claim 28, wherein:

- said adjustable beamformer generates the transmit beam in the predetermined direction using conventional phased array techniques.

32. (Previously Presented) The communication system claimed in claim 28, wherein:

- said adjustable beamformer is part of an adaptive antenna arrangement.

33. (Previously Presented) The communication system claimed in claim 28, wherein:  
said power control unit adjusts the power level of the transmit signal so that a maximum allowed power level is not exceeded.